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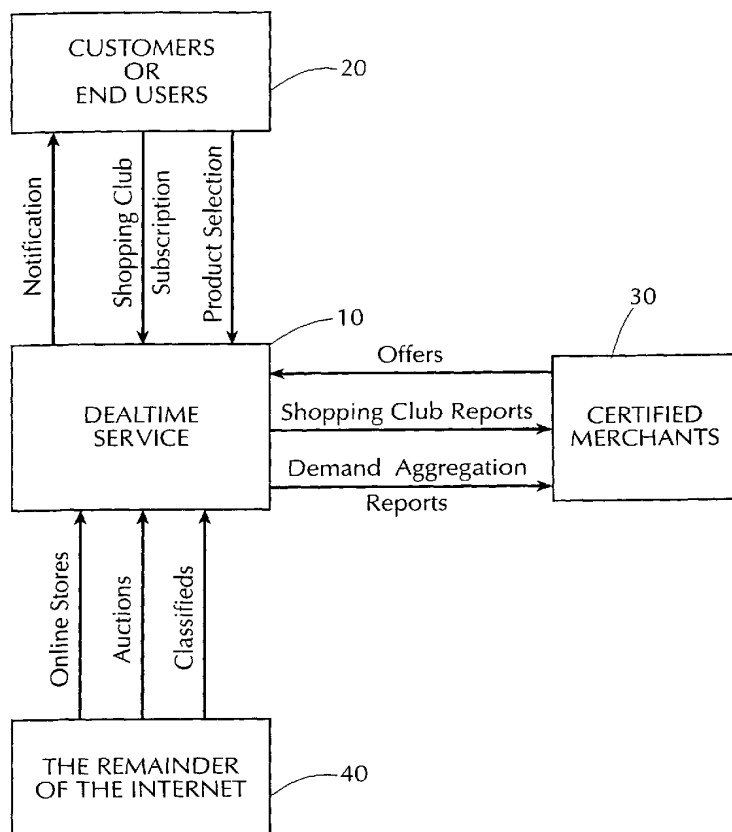
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(54) Title: E-COMMERCE REAL TIME DEMAND AND PRICING SYSTEM AND METHOD



(57) Abstract: The present invention includes a real time demand system and method for assessment of demand for goods or services in e-commerce transactions. The system has components for acquiring the price data of a particular product offered by a plurality of merchants (30) through Internet web sites, for acquiring the price data of a particular product actually purchased by consumers (20) through Internet web sites, for acquiring the price data of that product offered by a client merchant (10), for acquiring the cost data of that product to the client merchant, for acquiring pricing rules from the client merchant on which the product price can be modified, for modifying the product price based on the above data and rules, and for applying the modified price to the web site of the client merchant.



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## E-COMMERCE REAL TIME DEMAND AND PRICING SYSTEM AND METHOD

Cross-Reference to Related Application

This application is based on and claims priority to and the benefit of U.S. Provisional Patent Application Serial No. 60/118,684, filed February 5, 1999, is a continuation-in-part of U.S. Patent Application Serial No. 09/390,015 filed September 3, 1999, and is a continuation-in-part of U.S. Patent Application No. 09/565,226 filed May 4, 2000.

Technical Field

The invention relates to optimally pricing a product or service based on the real-time demand, competitors pricing, inventory, cost of goods and the merchant pricing strategy.

Background

Electronic commerce is a rapidly growing field of business. The opportunity for customers and for merchants to make known what they require and what they can supply, respectively, has been greatly enhanced by the availability of communication via the Internet. To place this development in historical perspective: in conventional commercial activity as practiced prior to the advent of the Internet, vendors typically advertise in print media and in electronic media such as radio and television by means of commercial messages that are broadcast to an entire populace at large.

Customers seeking a good deal are forced to visit or call merchants to determine price and availability of items that they wish to purchase, which can be both tedious and time consuming. Customers can additionally place want ads in various print media that are disseminated to the general populace, but this is typically a very inefficient process.

Today, a customer can use a personal computer to locate on the Internet or the World Wide Web (hereinafter “the web”) online storefronts and/or advertisements posted by vendors who have specific products for sale. Readily available and easily accessible information can in principle create a nearly perfect market where consumers can always choose the deal that suits them best from a wide variety of offerings and suppliers can reach all prospective customers without the need for a middleman. However, in practical experience, there are barriers on the road to such a perfect marketplace. One barrier is information overload created by the sheer volume of information that can be located. Another barrier is information accuracy based on the fact that this information is highly dynamic and can change quickly in time.

There are many thousands of web sites on the Internet offering merchandise in a large variety of categories. This merchant community is growing very rapidly. Market place (i.e., venues where buyers and sellers can interact) services that help users find their way through this vast array of information are available. Examples of such services include Bottom Dollar ([www.bottomdollar.com](http://www.bottomdollar.com)), mySimon ([www.mysimon.com](http://www.mysimon.com)), Jango ([www.jango.com](http://www.jango.com)) and others. Such services allow users to specify a product or service they are looking to buy and a price range they would like to buy it at. Market place services attempt to find as many deals as possible offered on the Internet that fall within the user specified range.

Even as the wealth of information is addressed by the market place services, or “shopping bots” described above, no adequate solution is provided with regard to the dynamic nature of the information. The market place services provide information that represents a “snapshot” of the

available deals as of a particular time. With the advent of selling techniques such as auctions, classifieds and special sale events of short duration that have greatly proliferated over the Internet, a “snapshot” provides inadequate information in real time.

A problem particular to merchants of market place services is the inability to precisely assess customer demand for particular goods or services. Consumer demand is important to merchants because it is an important element that drives merchant pricing, in addition to competition, cost of goods, profit margin, inventory and market share. The reason merchants cannot assess consumer demand is because the merchants each have only one price data point for a given product: their own price.

The above described e-commerce market place models have made it increasingly difficult for on-line merchants to assess the demand, and consequently, the optimal price of their goods and services. This is true because of both the number of different types of e-commerce consumer transactions available, as well as the speed and volume at which these transactions are consummated.

A need thus exists for a real time demand system and method by which on-line merchants can assess the demand of goods or services in e-commerce transactions in order to more accurately assess the optimal price of these goods or services.

#### Summary of the Invention

The present invention includes a real time demand system by which on-line merchants can assess demand for goods or services in e-commerce transactions to more accurately assess the fair optimal price of these goods or services. The system has components for acquiring the price data of a particular product offered by a plurality of merchants through Internet web sites, for acquiring the price data of a particular product actually purchased by consumers through Internet web sites, for acquiring the price data of that product offered by a client merchant, for

acquiring the cost data of that product to the client merchant, for acquiring pricing rules from the client merchant on which the product price can be modified, for modifying the product price based on the above data and rules in real-time, and for applying the modified price to the web site of the client merchant.

The present invention also includes a real time demand method by which on-line merchants can assess demand for goods or services in e-commerce transactions to more accurately assess the optimal price of these goods or services. The method includes acquiring the price data of a particular product offered by a plurality of merchants through Internet web sites, acquiring the price data of a particular product actually purchased by consumers through Internet web sites, acquiring the price data of that product offered by a client merchant, acquiring the cost data of that product to the client merchant, acquiring pricing rules from the client merchant on which the product price can be modified, modifying the product price in real-time based on the above data and rules, applying the modified price to the web site of the client merchant.

#### Brief Description of the Drawings

In the drawings, like reference characters generally refer to the same parts throughout the different views. Also, the drawings are not necessarily to scale, emphasis instead generally being based upon illustrating the principles of the invention.

FIG. 1 is a schematic overview of an embodiment of an e-commerce system showing the interrelationships between and among the system and the end users or customers, the certified merchants, and the remainder of the Internet;

FIG. 2 is a schematic overview of an e-commerce system;

FIG. 3 is a schematic diagram of system hardware and software that can provide functionality to an e-commerce system;

FIG. 4 is a block diagram of the upper level hardware of the subject invention;  
FIG. 5 is a block diagram of the hardware functionality of the subject invention;  
FIG. 6 is a flow chart of the product purchase history data gathering program;  
FIG. 7 is a flow chart of the merchant product price data gathering program; and  
FIG. 8 is a flow chart of the rules engine and pricing engine programs.

#### Detailed Description of the Preferred Embodiments

One embodiment of the invention involves a web site on the World Wide Web with the address [www.DealTime.com](http://www.DealTime.com) (hereinafter, "DealTime.com"). The invention can be employed in conjunction with both systems and methods for conducting demand-driven e-commerce. The systems and methods embodied in DealTime.com enable users to exploit fully and efficiently the dynamic, information-rich nature of the Internet generally and the World Wide Web particularly. The systems and methods embodied in DealTime.com feature the ability to aggregate demand by collecting user requests for products and/or services and creating economies of scale that benefit both consumers and merchants.

In order to facilitate the above dynamic pricing methodology, in one embodiment, the customer communicates his or her purchase requirements to the system, which stores these requests in a computer database. In this embodiment, another portion of the database search and track relevant merchants for offers of sale items that satisfy those requirements.

The existence of a repository of customer product requirements, traffic to merchants and transaction information for a time period creates an opportunity to identify demand for any given product by a number of customers, and to leverage such demand to the advantage of both merchants and customers.

FIG. 1 is a schematic overview of an embodiment of an e-commerce system showing the interrelationships between and among the system and the end users or customers, the certified

merchants, and the remainder of the Internet. Since DealTime.com is a web site, communication between customers and DealTime.com and between certified merchants and DealTime.com occurs over the Internet. The term “the remainder of the Internet” refers to Internet users and web sites that are neither “customers” nor “certified merchants.” Both the terms “customer” and “certified merchant” will be described in more detail below. The DealTime Service 10 indicates an embodiment of the methods and systems of the present invention.

The DealTime Service 10 accepts requests from customers or end users 20. A user of the web becomes a customer by visiting the DealTime.com web site and registering a request with the DealTime.com web site. In the following discussion, the term “desired purchase” is intended to refer to some good or service or other thing of value that one may wish to obtain. Examples of “desired purchases” can include but are not limited to a home appliance such as a television that customer wishes to buy, an object such as an automobile that a customer wishes to lease, or a service such as transportation or entertainment that a customer wishes to enjoy by purchasing a ticket or making a reservation. Other examples of benefits that a customer might seek to obtain through the use of the invention include the provision of information that is accessible via the Internet, such as news or financial data. A request can include a description of a desired purchase of a customer 20, a maximum price the customer 20 is prepared to pay, a target point in the future by which the customer 20 wants to complete the transaction, and other relevant information that the customer 20 may provide, such as quantity required. In another embodiment, the customer 20 may provide a request based on a product or service described on the DealTime Service 10 web site. Such communications by a customer 20 are denoted in FIG. 1 by the arrow labeled Product Selection.

FIG. 1 further depicts the interaction of the DealTime Service 10 with the remainder of the Internet 40 or the web. The DealTime Service 10 includes a plurality of web crawlers, which



will be described in more detail below. A web crawler is a computer program or computer process that can contact other web sites and can explore the information presented at a contacted site. A web crawler can have the ability to search for specific information on the web, and can both catalog the location of the information of interest that it finds, as well as downloading a copy of some or all of the content of interest that is located.

As depicted in FIG. 1, the DealTime Service 10 can by this web crawler capability obtain information relating to goods and services that are available on the remainder of the Internet, and information relating to the vendors of such goods and services. The information that can be obtained can include offers available through online stores (e.g., vendors such as amazon.com), offers available through auctions (e.g., offers presented via online auctioneers such as ebay.com), and offers available by classified postings on the web. The information so obtained can be communicated to a customer 20 who is interested in the specific good or service that is offered.

FIG. 2 is a schematic overview of the DealTime Alert Service. At the left of FIG. 2 are depicted some of the kinds of information that is available on the web, including online auctions, person to person auctions, classifieds, last minute deals, and sale/closeout offers. Many of these kinds of transactions are time-sensitive. As already noted, such information relating to the offer of goods and services can be located by one or more web crawlers 11 that are depicted as a part of the DealTime Service 10.

The information retrieved by a crawler 11 can be stored in a Deals database 12 that is maintained by the DealTime Service 10. The Deals database 12 contains aggregated information from e-commerce sites. This information is sorted by the specific attributes of each product or service. For example, desktop computers can be sorted by their manufacturer, model number, amount of hard disk and RAM as well as other features. As a crawler 11 obtains more current information, or new information, the Deals database 12 can be updated or augmented as

appropriate. The crawlers 11 periodically scan targeted auction, classified ad, Internet merchant and service provider sites and bring information about new deals into the Deals database 12.

The Deals database 12 stores the product offers that are available to the online user searching for a product. The number of offers and the level of detail are both of great importance. The deal data is sorted into a set of Deals\_\* tables based on product type (e.g. Deals\_Laptops) by the sorting process. The sorting process is also responsible for identifying the different attributes of the product (e.g., processor type).

The data originates from the following sources:

1. "Crawlers" - Programs that scan a merchant site and collect the data describing the product offers on the site.
2. "Feeds" - Formatted files supplied by paying merchants that contains the product offers of the merchant.
3. "Deals Agent" - DealTime's merchant interface that enables a merchant to create a unique product offer and store it directly in the Deals database.

Deals database 12 includes a multiple tabular format populated with the following column-identifiers:

ID	A unique identifier of the deal
DEALERID	The ID of the merchant that offers the deal
DEALTYPE	DealTime offers several types of deals: Online stores, Auctions, Classified, Person-2-Person, Group Buying and Special deals (Deal Agent)
NAME	The product description
ITEMSLEFT	The quantity of items available in the merchant site of this product offer
PRICE	The price of the product offer
STARTTIME	The time when the deal was stored

ENDTIME	The expiration date of the deals. This is dependent on the DealType – auction deals expire before deals from online stores
URL	A link to the product on the merchant site
CATEGORY 1,2,3...	A list of categories describing the nature of the product
MANUFACTURER	The manufacturer of the product offer
LOCALPRICE	If the deal is from an international site – the price in the local currency of the merchant's country
LOCALCURRENCY	If the deal is from an international site – the currency sign of the merchant's country
REVIEWID	A link to a review describing the product
MEMBER_PRICE	The price by which the product is offered to members (and not guests) on the merchant site
IN_STOCK	Is the product in stock on the merchant site
SHIPPING_COST	The cost of shipping of this product, assuming the cost is fixed

In one embodiment, DealTime.com has developed technology that enables the creation of a crawler and a sorter dedicated to parsing a specific e-commerce site into the Deals database 12, with minimum effort and using relatively unskilled personnel. This enables DealTime.com to add new e-commerce sites to its Deals database 12 inexpensively and at a rapid pace. The technology has two primary components, a high level, site description language, and a dictionary that contains the product and service description elements in many different categories. This dictionary continuously “learns” the terms used in different areas and then identifies and correlates such terms as various crawlers examine and parse merchant sites. The crawler (using, for example, C++ crawlers and VisualCrawler<sup>®</sup>) downloads the URLs (HTML pages) from third-party web sites, and parses them to extract data representing deals. The crawler may be preprogrammed to recognize the particular format and content unique to the third-party web site.

The crawler can then use, for example, Oracle Pro-C technology to insert the unsorted deal data into the Deals database Deals database 12 in the Raw-Deals table. The sorter, which is a daemon, will take those unsorted deals from the Raw-Deals table of the Deals database 12 and sort them based on data type. It will use a dictionary of keywords, which it stores in its memory, to categorize those deals. The dictionary can be a program that parses the new data obtained by the crawler program from the third-party web sites, compares this data with data previously obtained by the crawler program from third-party web sites and already added to a tabulation of terms, and adds the new data to the pre-existing tabulation of terms if this new data is not already present in the tabulation of terms. The output, sorted deals, are then stored in the appropriate table in the Deals database 12.

FIG. 2 also depicts a personal computer 22 or a customer 20. The customer 20 can use this personal computer 22 to communicate with the DealTime web site 15 via the Internet. As depicted in FIG. 2, the customer 20 can transmit via personal computer 22 the information necessary to initiate action by the DealTime Service 10, namely, a request for a desired product or service, along with information that identifies the user to the DealTime Service 10, which is collectively represented as the arrow labeled user personalization 16. This request information is maintained by DealTime Service 10 in a user database 14 that can be accessed by the DealTime Service 10 even when the customer's personal computer 22 is no longer connected to the DealTime Service 10. The user database 14 contains information about customers or users and the products and services about which they would like to be alerted. Each user is assigned a unique user number. Desired product and service category information is stored for each user, as well as the user's requested notification preference and preferred type of e-commerce site.

FIG. 2 further depicts a matching engine 13 that can compare the requests of customers 20 that are recorded in user database 14 with the information about offers of goods and services

that are recorded in Deals database 12. The matching engine 13 uses highly efficient comparison methods. When a record of an offer is found that matches a record of a request, the pertinent information is made available to the user via any of the available notification channels that the customer 20 has selected. The customer 20 can be notified via e-mail notification channel 17, via Desktop Notifier using desktop notification channel 18, or by pager notification via pager channel 19 that sends a message to the customer's Internet-based pager device through the intermediation of a typical radio tower 123 using conventional pager technology. Desktop Notifier is a custom software application that the customer can download from the DealTime web site 15. This application adds a resident program to the customer's personal computer 22 that permits the personal computer 22 to automatically connect to the DealTime web site 15. The operation of Desktop Notifier is described more fully below.

The matching engine 13 is responsible for seeking the deals in the Deals database 12 that match the request of the user. The matching engine 13 is used for handling request by both online web users and users that requested tracking and notification of their requests. In operation, the user request, called an "Item," is stored in one of the Items\_\* tables of the Deals database 12 (e.g., Items\_Laptops). The Item line contains a set of parameters defining the user's request (price range, product categories, etc.). The matching engine 13 queries the Deals database 12 for deals that match these parameters. The matching engine 13 returns, for example, 200 rows of tabular data that best match the user's request. The results are stored in the Deals\_Results table of Deals database 12, from which the web site later on retrieves the results and displays them to the user. The results are sorted according to the weight of the dealer and then the price. Merchants with a higher weight will be displayed first, and within the same weight group. Results will be sorted by price. Results are cached for a certain period of time. If a user issues a request that is identical to a previous request that occurred recently, matching

engine 13 returns the results directly from the Deals\_Results table of Deals database 12 and does not re-query the Deals database 12. The matching engine 13 can be implemented using Oracle stored procedures. The code can be written in the PL/SQL language and stored within the database.

FIG. 2 also depicts a personal computer 23 of a certified merchant 30. The certified merchant 30 can use this personal computer 23 to communicate with the DealTime web site 15 via the Internet. The certified merchant 30 can use the personal computer 23 to retrieve information of customer demand for certain products in the Deal Data Base 12, or to obtain information on Shopping Club status. The certified merchant 30 can use the personal computer 23 to respond to such information by submitting offers to DealTime customers 20.

FIG. 3 is a schematic diagram of system hardware and software that embodies the system and methods of the foundation DealTime technology. In FIG. 3 there is depicted the DealTime web site 15 [www.DealTime.com](http://www.DealTime.com) that serves as the entry point to the DealTime Service 10. Communication via the Internet with the DealTime web site 15 by customers 20 and by certified merchants 30 is routed by the local director 28 to one of the one or more web servers 29 that are provided to handle communications. Once a connection has been established with the DealTime Service 10 via the DealTime web site 15 and a web server 29, the DealTime Service 10 routes the communication from the customer 20 or the certified merchant 30 to the appropriate area of the database system 24. The database system 24 includes one or more data storage devices 25 that can be divided into storage for both user database 14 and Deals database 12. One or more database servers 27 are provided to allow access to the database storage 25 in real time. A database control system 26 is provided to oversee the proper operation of the database system 24, and to maintain control over access to the data storage devices 25. One or more web crawlers

11 are provided to search for specific information on the web and to retrieve information corresponding to requests for storage within the database system 24.

Next referring to FIGS. 4-8 the e-commerce real time demand and pricing system and method of the present invention, which can be employed with the e-commerce system of FIGS. 1-3, is shown. It will be understood that the e-commerce system of FIGS 1-3 is an exemplary system with which the present invention can be employed, and that any system, e-commerce or other, employing a market place format (i.e., a venue where buyer and seller can interact) is contemplated to be within the scope of the subject invention. Specifically referring to FIG. 4, the upper level hardware of the present invention is shown. DealTime web site 402 is in communication with consumer 404 via the Internet in a manner previously described in reference to FIGS. 1-3. Likewise, DealTime web site 402 is also in communication with client merchant web sites 406 (i.e., the web sites of merchants who subscribe to the real time demand and pricing system and method of the present invention) as well as non-client merchant web sites 408. DealTime database 410, in communication with DealTime web site 402, is a data repository of information pertaining to price information for products offered by non-client merchant web sites 408. Price data is compiled in deal database 410 from non-client merchant web sites 408 by use of a crawler program described above that may be launched by DealTime web site 402 to parse non-client merchant web site 408 for price data for a specific product, and that returns to DealTime web site 402 with the desired pricing information for inclusion into deal database 410.

Demand database 412 is also in communication with DealTime web site 402 and provides a compilation of the demand, i.e., the product types, the quantity of each product type and the price of each unit of product, purchased from either non-client merchant web sites 408 or client merchant web sites 406 through DealTime web site 402 employing the system and method described above in FIGS. 1-3. Alternatively, demand database 412 can also, or instead, compile

“click-through” data from potential customers who do not actually purchase at web sites 406 and/or 408 but merely access the web page associated with the product i.e., “virtual window shopping.” The amount of “virtual window shopping” for a given product has a direct correlation to product demand. The above described data can be stored as either raw numerical data, or can be formatted into price or demand curves.

Merchant cost database 416 is a repository for information on cost incurred for each separate product by client merchants. This information, which can include wholesale cost, shipping and handling charges for example, as well as inventory, can be submitted by the client merchant to DealTime for entry into merchant cost database 416 by DealTime, or alternatively the cost information can be directly entered or edited by the client merchant into merchant cost database 416 over the Internet by transmitting the data from merchant client web site 406 to DealTime web site 402. Merchant cost database 416 is in data communication with rules engine 414, described below.

Merchant price database 418 is a repository for information on the retail price of each separate product offered by client merchants. This information can be submitted by the client merchant to DealTime for entry into merchant cost database 416 by DealTime, or alternatively the price information can be directly entered or edited by the client merchant into merchant price database 418 over the Internet by transmitting the data from merchant client web site 406 to DealTime web site 402. Merchant price database 418 is in data communication with rules engine 414, described below.

Rules engine 414 organizes the cost data from merchant cost database 416, the price data from merchant price database 418, and the non-client price data from deal database 410 into a data format divided by each separate product description. Rules engine also obtains pricing rules from the client merchants. These rules can be supplied from the client merchants to DealTime



for entry into rules engine 414, or the client merchants can employ the interface between client merchant web site 406 and DealTime web site 402 to provide pricing rules to rules engine 414. Pricing rules can be specific to each of the product of the client merchant, and can be based on one or more of the following non-limiting examples: a profit margin of at least X%; price must be at least X% below competing merchant A; lower the price to a point where X% of consumers have historically paid that price or higher with the last Y days; only modify the price if X or more units are reflected in the demand data of demand database 412. Pricing rules can be based upon, for example, market share, inventory, cost, profit and/or competition factors. Obviously, different client merchants will provide different pricing rules.

The rules engine 414 passes the above described data and pricing rules to pricing engine 424 which applies the pricing rules of a particular client merchant to the data from deal database 410, demand database 412, merchant cost database 416 and merchant price database 418 to produce a revised purchase price for a particular product of that client merchant.

Pricing engine 424 outputs the revised purchase price to pricing checkpoint 424, which is a software application that shows the revised product price to the client merchant for approval.

Upon approval by the client merchant, received through the client merchant web site 406 and DealTime web site 402 interface, price change subroutine 426 alters the price of that particular product offered by that particular merchant in merchant price database 418, and may also alter that product price on the client merchant web site 406 through DealTime web site 402.

Referring to FIG. 5, an example of the function of the hardware of FIG. 4 is shown. At block 502 the comparison shopping service that connects millions of shoppers with thousands of merchants is shown. DealTime collects the buying information from users who perform a search, click to merchants or buying using the DealTime account. When someone on DealTime.com selects a product and clicks-through to a merchant's web site 406 or 408,

DealTime records the exact product and price in real-time. This information is gathered in aggregate form, without matching any of the users personal information. At block 504 the system matches the exact product to the product demand database 412. This product demand databases 412 creates or updates a demand curve every 5 minutes based on the aggregated searching and buying information. The demand curve produced records the individual data points for the product at various different price levels. For example, 2 different people click on a Palm V listing on DealTime. One of these people select the Palm V at \$259 at one merchant, and the other person selects it for \$289 from another merchant. From this scenario, the demand curve would show equal demand for both prices, based on 2 data points.

All of the products featured on DealTime have an active demand curve. These demand curves are stored within DealTime's demand data warehouse 506. This data warehouse 506 categorizes and maintains each individual demand curve in a manner that allows for the information to be easily accessed by pricing engine 424. Each client merchant has a cost database 416 where all of their available products are matched to their exact pricing and cost from their suppliers. This data is passed to pricing engine 424 either through a file feed at intervals throughout the day, or through a real-time database link at block 508. By checking the cost, at block 510 the pricing engine 424 maintains the correct margin levels for the merchant (the margin levels are defined by the merchant using the rules engine 414). The cost of goods is checked within a real-time environment.

The deal database 410 is the functionality for product/price comparison across thousands of merchant's web sites. At block 510 crawlers search specific merchant site to bring back product and pricing information in real-time to update the listings. Part of the rule set in dynamically generating pricing for merchants is governed by the pricing of the merchant's competitors. All of the exact products that a merchant and its competitors carry are compared

in real-time at block 514 and stored in deal database 410 before being pulled into the pricing engine 424. The competitive information ensures that the merchant can maintain the most attractive pricing.

Each client merchant has to provide a detailed rules base for handling its SKUs, categories or other product sets to merchant cost database 416 at block 516. These rules determine the pricing strategies for the merchant's products. Certain products will follow many specific rules provided by the merchant, while other products may follow only one rule. The merchant controls these product/rule relationships through a graphical user interface.

The rules engine 414 compiles the information from block 516 at block 518 and interacts with the pricing engine 424. This rules engine 414 provides the rules set of how the merchant's products should change based on the level of demand, pricing guidelines by the merchant and overall buying trends of DealTime. The rules engine governs 414 the actions of the pricing engine 424 and sets the level at which pricing conditions should be altered.

At block 520, the pricing engine 424 compiles the information from blocks 506-518 and develops real-time pricing for all of the client merchant's available products. For example, if the process notices that the optimum price for the Palm V is \$259, and if the merchant and rules engine meets all conditions, the pricing engine 424 will change the price to \$259.

The pricing engine 424 passes the price changes through a final checkpoint at block 522. If a merchant requires final approval on a specific product(s), they can approve the pricing change through a monitoring tool. This monitoring tool provides an overview of all product-pricing changes and allows for approval before changes go through to the merchant price database 418.

At block 524, once the pricing engine 424 alters a price, the product pricing within the merchant price database 418 is changed to reflect the new pricing. At block 520, the new pricing

from block 524 is also reflected throughout the merchant's order fulfillment system on client merchant web site 406. The available products for on and off-line buyers are altered. At block 528, customers can now buy at the optimized price.

Referring to FIG. 6, a flow chart of the product purchase history data gathering program of demand database 412 is shown. At block 602, DealTime web site 402 receives product purchase information (i.e., price, product brand and product model number) based on the purchase by a customer of a product from client merchant web site 406 or non-client merchant web site 408 employing DealTime web site 402. This purchase information is stored in demand database 412 at block 604. At block 606 a demand curve is created (or updated) based on the data received at block 604. At block 608, these created demand curves are also stored in demand database 412. At block 610 the data from block 606 is exported to rules engine 414 at block 806 of FIG. 8. At block 610, the program also loops back to block 602.

Referring to FIG. 7, a flow chart of the merchant product price data gathering program of deal database 410 is shown. At block 702 DealTime web site 702 creates a crawler program to obtain a price specific to a product located in merchant price database 418. At block 704 the crawler program is sent to a plurality of non-client merchant web sites 408 (and client merchant web sites 406). At block 706 the crawler parses the non-client merchant web sites 408 and sends the price data from the non-client merchant web sites 408 to DealTime web site 402. At block 708 the price data is stored in deal database 410 and is then exported to rules engine 414 at block 804 of FIG. 8.

Referring to FIG. 8, a flow chart of the rules engine 414 and pricing engine 424 programs is shown. At block 802, a client merchant provides pricing rules to rules engine 414. At block 804, current product price data from deal database 410 is sent to rules engine 414. At block 806, current product purchase data is sent from demand database 412 to rules engine 414. At block

810, client merchant price data is sent from merchant price database 418 to rules engine 414. At block 812, client merchant cost data is sent from merchant cost database 416 to rules engine 414. At block 814, rules engine 414 compiles the data from blocks 804 to 812 for a desired product of a particular client merchant compiles that merchant's pricing rules for that products, and forwards this information to pricing engine 424 which, at block 816, calculates the optimal price for that merchant's particular product. At block 818 pricing check point 424 communicates to the client merchant (for example through the client merchant web site 406 and DealTime web site 402 interface) the proposed product price change. Block 820 is a decision block. If the client merchant does not confirm the proposed product price at block 820 the program aborts the price change at block 822. If the client merchant does confirm the proposed product price at block 820, the program proceeds to block 824. At block 824 price change subroutine 426 changes the price of the merchant's product to the price proposed by the pricing engine 424 in both merchant price database 418 and on client merchant web site 406.

Variations, modifications, and other implementations of what is described herein will occur to those of ordinary skill in the art without departing from the spirit and the scope of the invention as claimed. Accordingly, the invention is to be defined not by the preceding illustrative description but instead by the spirit and scope of the following claims.

CLAIMS

What is claimed is:

1. A system for optimizing the price of goods or services comprising:
  - a component for acquiring price data of a product offered by merchants;
  - a component for acquiring demand data of the product purchased by consumers;
  - a component for acquiring price data of the product offered by a client merchant;
  - a component for acquiring pricing rules from the client on which the product price can be modified; and
  - a component for modifying the product price based on the price data, demand data and the pricing rules.
2. The system of claim 1 wherein the price data is acquired on a global computer network.
3. The system of claim 1 further comprises:
  - a component for acquiring cost data of the product to the client merchant.
4. The system of claim 1 further comprising:
  - a component for applying the modified price to the product of the client merchant.
5. The system of claim 1 wherein the pricing rules are based on at least one of a predetermined profit margin, a price a predetermined amount below a competitor, and a price below a price paid by a predetermined percent of consumers.
6. The system of claim 1 further comprising:
  - a component to notify the client merchant of the modified product price.
7. The system of claim 6 further comprising:
  - a component to apply the modified price to the product of the client merchant only if the client merchant assents to the modified price.

8. A system for optimizing the price of goods or services comprising:
  - a component for acquiring price data of a product offered by merchants;
  - a component for acquiring demand data of the product purchased by consumers;
  - a component for acquiring price data of the product offered by a client merchant;
  - a component for acquiring cost data of the product to the client merchant;
  - a component for acquiring pricing rules from the client on which the product price can be modified;
  - a component for modifying the product price based on the price data, the demand data, the cost data and the pricing rules; and
  - a component for applying the modified price to the product of the client merchant.
9. The system of claim 8 wherein the price data is acquired on a global computer network.
10. The system of claim 8 wherein the pricing rules are based on at least one of a predetermined profit margin, a price a predetermined amount below a competitor, and a price below a price paid by a predetermined percent of consumers.
11. The system of claim 8 further comprising:
  - a component to notify the client merchant of the modified product price.
12. The system of claim 11 further comprising:
  - a component to apply the modified price to the product of the client merchant only if the client merchant assents to the modified price.
13. A system for optimizing the price of goods or services in a global computer network marketplace comprising:
  - a component for acquiring price data of a product offered by merchants on the global computer network;

a component for acquiring demand data of the product purchased by consumers on the global computer network;

a component for acquiring price data of the product offered by a client merchant;

a component for acquiring pricing rules from the client on which the product price can be modified;

a component for modifying the product price based on the price data, demand data, and the pricing rules; and

a component for applying the modified price to the product of the client merchant.

14. The system of claim 13 further comprising:

a component for applying the modified price to the product of the client merchant.

15. The system of claim 13 wherein the pricing rules are based on at least one of a predetermined profit margin, a price a predetermined amount below a price of a competitor, and a price below a price paid by a predetermined percent of consumers.

16. The system of claim 13 further comprising:

a component to notify the client merchant of the modified product price.

17. The system of claim 16 further comprising:

a component to apply the modified price to the product of the client merchant only if the client merchant assents to the modified price.

18. A system for optimizing the price of goods or services in a global computer network marketplace comprising:

a component for acquiring price data of a product offered by merchants on the global computer network;



a component for acquiring demand data of the product purchased by consumers on the global computer network;

a component for acquiring price data of the product offered by a client merchant;

a component for acquiring cost data of the product to the client merchant;

a component for acquiring pricing rules from the client on which the product price can be modified; and

a component for modifying the product price based on the price data, the demand data, the cost data and the pricing rules.

19. The system of claim 18 further comprising:

a component for acquiring cost data of the product to the client merchant.

20. The system of claim 18 wherein the pricing rules are based on at least one of a predetermined profit margin, a price a predetermined amount below a competitor, and a price below a price paid by a predetermined percent of consumers.

21. The system of claim 18 further comprising:

a component to notify the client merchants of the modified product price.

22. The system of claim 21 further comprising:

a component to apply the modified price to the product of the client merchant only if the client merchant assents to the modified price.

23. A system for optimizing the price of goods or services in a global computer network marketplace comprising:

a component for acquiring price data of a product offered by merchants on the global computer network;

a component for acquiring demand data of the product purchased by consumers on the global computer network;

a component for acquiring price data of the product offered by a client merchant;  
a component for acquiring cost data of the product to the client merchant;  
a component for acquiring pricing rules from the client on which the product price can be modified;  
a component for modifying the product price based on the price data, demand data, the cost data and the pricing rules; and  
a component for applying the modified price to the product of the client merchant.

24. The system of claim 23 wherein the pricing rules are based on at least one of a predetermined profit margin, a price a predetermined amount below a price of a competitor, and a price below a price paid by a predetermined percent of consumers.
25. The system of claim 23 further comprising:  
a component to notify the client merchants of the modified product price.
26. The system of claim 23 further comprising:  
a component to apply the modified price to the product of the client merchant only if the client merchant assents to the modified price.
27. A method for optimizing the price of goods or services comprising:  
acquiring price data of a product offered by merchants;  
acquiring demand data of the product purchased by consumers;  
acquiring price data of the product offered by a client merchant;  
acquiring pricing rules from the client on which the product price can be modified; and  
modifying the product price based on the price data, the demand data and the pricing rules.

28. The method of claim 27 wherein the price data is acquired on a global computer network.
29. The method of claim 27 further comprising:
  - acquiring cost data of the product to the client merchant.
30. The method of claim 27 further comprising:
  - applying the modified price to the product of the client merchant.
31. The system of claim 27 wherein the pricing rules are based on at least one of a predetermined profit margin, a price a predetermined amount below a competitor, and a price below a price paid by a predetermined percent of consumers.
32. The method of claim 28 further comprising:
  - notifying the client merchant of the modified product price.
33. The method of claim 32 further comprising:
  - applying the modified price to the product of the client merchant only if the client merchant assents to the modified price.
34. A method for optimizing the price of goods or services comprising:
  - acquiring price data of a product offered by merchants;
  - acquiring price data of the product purchased by consumers;
  - acquiring demand data of the product offered by a client merchant;
  - acquiring cost data of the product to the client merchant;
  - acquiring pricing rules from the client on which the product price can be modified;
  - modifying the product price based on the price data, the demand data, the cost data and the pricing rules; and
  - applying the modified price to the product of the client merchant.
35. A method of claim 34 wherein the price data is acquired on a global computer network.

36. The method of claim 34 wherein the pricing rules are based on at least one of a predetermined profit margin, a price a predetermined amount below a competitor, and a price below a price paid by a predetermined percent of consumers.
37. The method of claim 34 further comprising:  
notifying the client merchant of the modified product price.
38. The method of claim 37 further comprising:  
applying the modified price to the product of the client merchant only if the client merchant assents to the modified price.
39. A method for optimizing the price of goods or services in a global computer network marketplace comprising:  
acquiring price data of a product offered by merchants on the global computer network;  
acquiring demand data of the product purchased by consumers on the global computer network;  
acquiring price data of the product offered by a client merchant;  
acquiring pricing rules from the client on which the product price can be modified;  
modifying the product price based on the price data, the demand data, and the pricing rules; and  
applying the modified price to the product of the client merchant.
40. The method of claim 39 further comprising:  
applying the modified price to the product of the client merchant.

41. The method of claim 39 wherein the pricing rules are based on at least one of a predetermined profit margin, a price a predetermined amount below a competitor, and a price below a price paid by a predetermined percent of consumers.
42. The method of claim 39 further comprising:  
notifying the client merchant of the modified product price.
43. The method of claim 42 further comprising:  
applying the modified price to the product of the client merchant only if the client merchant assents to the modified price.
44. A method for optimizing the price of goods or services in a global computer network marketplace comprising:  
acquiring price data of a product offered by merchants on the global computer network;  
acquiring demand data of the product purchased by consumers on the global computer network;  
acquiring price data of the product offered by a client merchant;  
acquiring cost data of the product to the client merchant;  
acquiring pricing rules from the client on which the product price can be modified; and  
modifying the product price based on the price data, the demand data, the cost data and the pricing rules.
45. The method of claim 44 further comprising:  
acquiring cost data of the product to the client merchant.

46. The method of claim 44 wherein the pricing rules are based on at least one of a predetermined profit margin, a price a predetermined amount below a competitor, and a price below a price paid by a predetermined percent of consumers.
47. The method of claim 44 further comprising:  
notifying the client merchant of the modified product price.
48. The method of claim 47 further comprising:  
applying the modified price to the product of the client merchant only if the client merchant assents to the modified price.
49. A method for optimizing the price of goods or services in a global computer network marketplace comprising:  
acquiring price data of a product offered by merchants on the global computer network;  
acquiring demand data of the product purchased by consumers on the global computer network;  
acquiring price data of the product offered by a client merchant;  
acquiring cost data of the product to the client merchant;  
acquiring pricing rules from the client on which the product price can be modified;  
modifying the product price based on the price data, the demand data, the cost data and the pricing rules; and  
applying the modified price to the product of the client merchant.
50. The method of claim 44 wherein the pricing rules are based on at least one of a predetermined profit margin, a price a predetermined amount below a competitor, and a price below a price paid by a predetermined percent of consumers.

51. The method of claim 44 further comprising:  
notifying the client merchant of the modified product price.
52. The method of claim 51 further comprising:  
applying the modified price to the product of the client merchant only if the client merchant assents to the modified price.

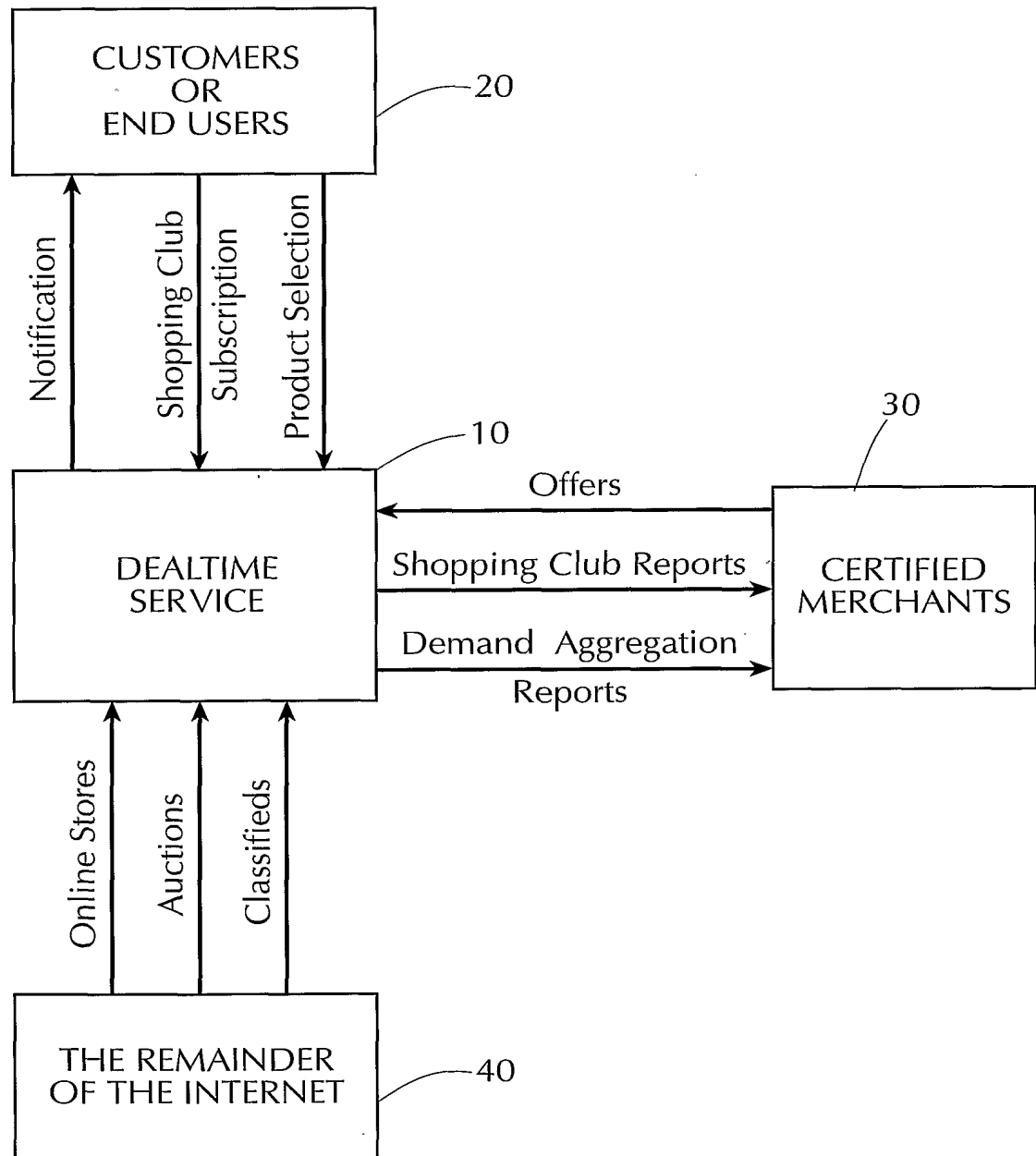
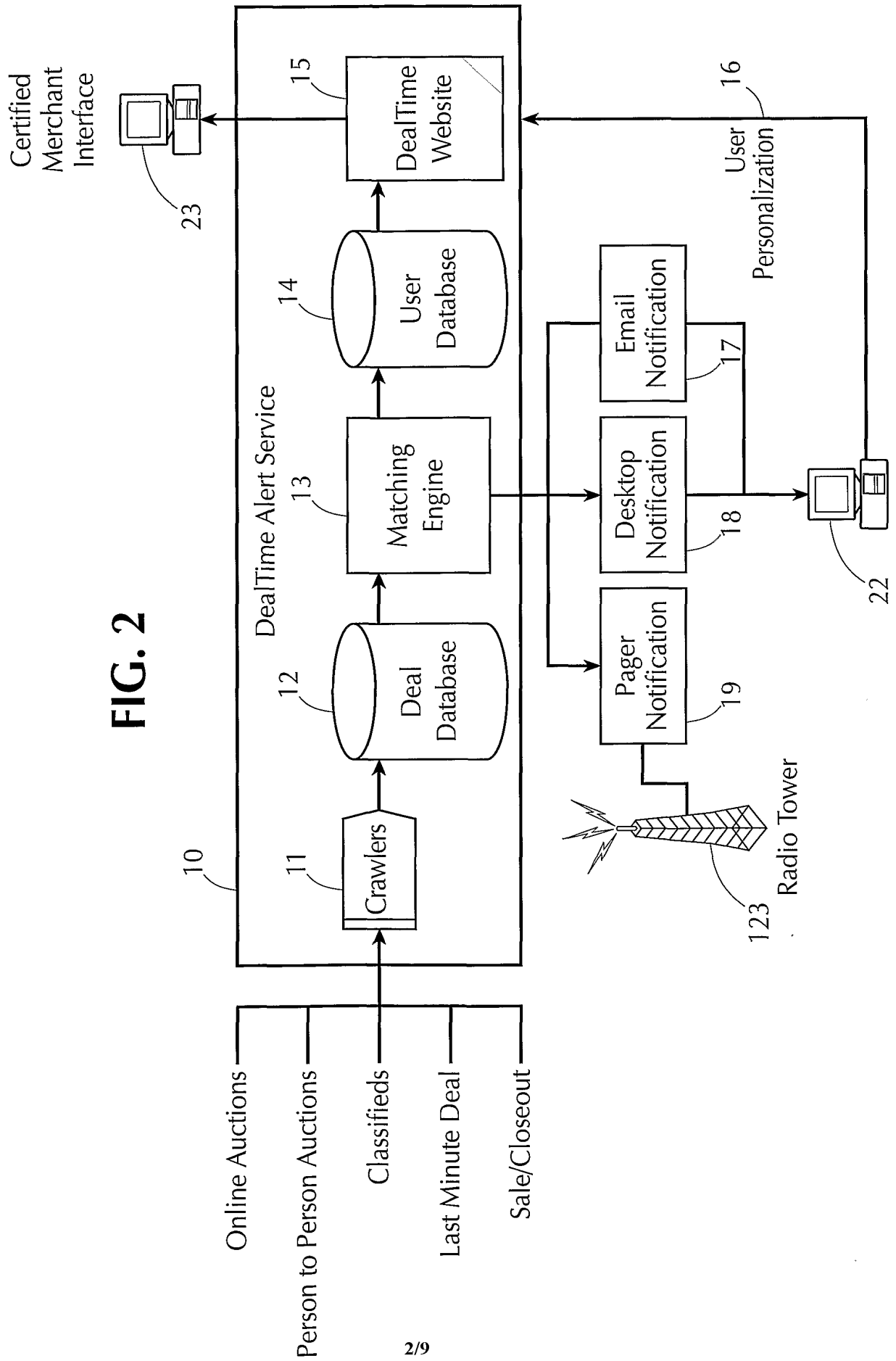
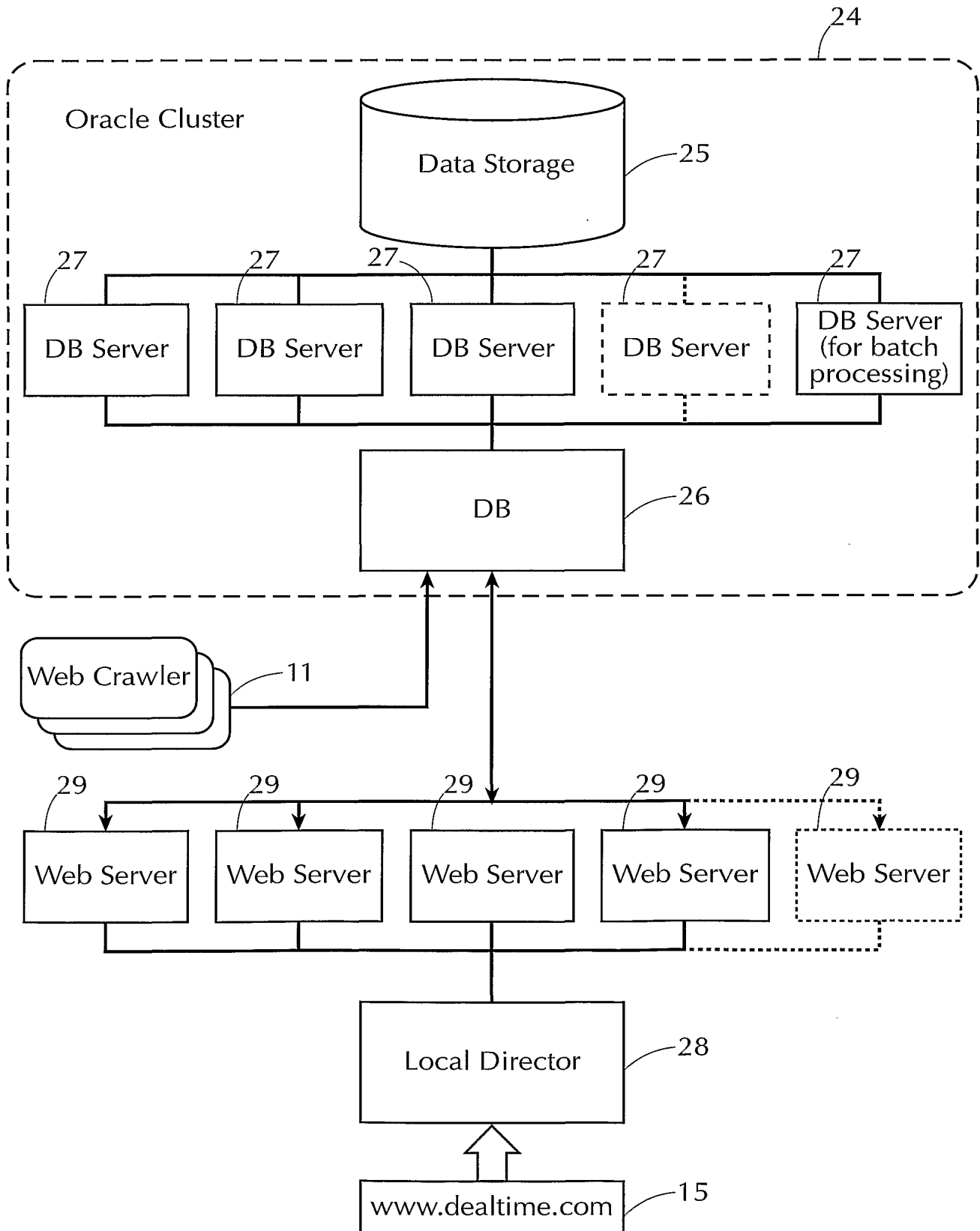
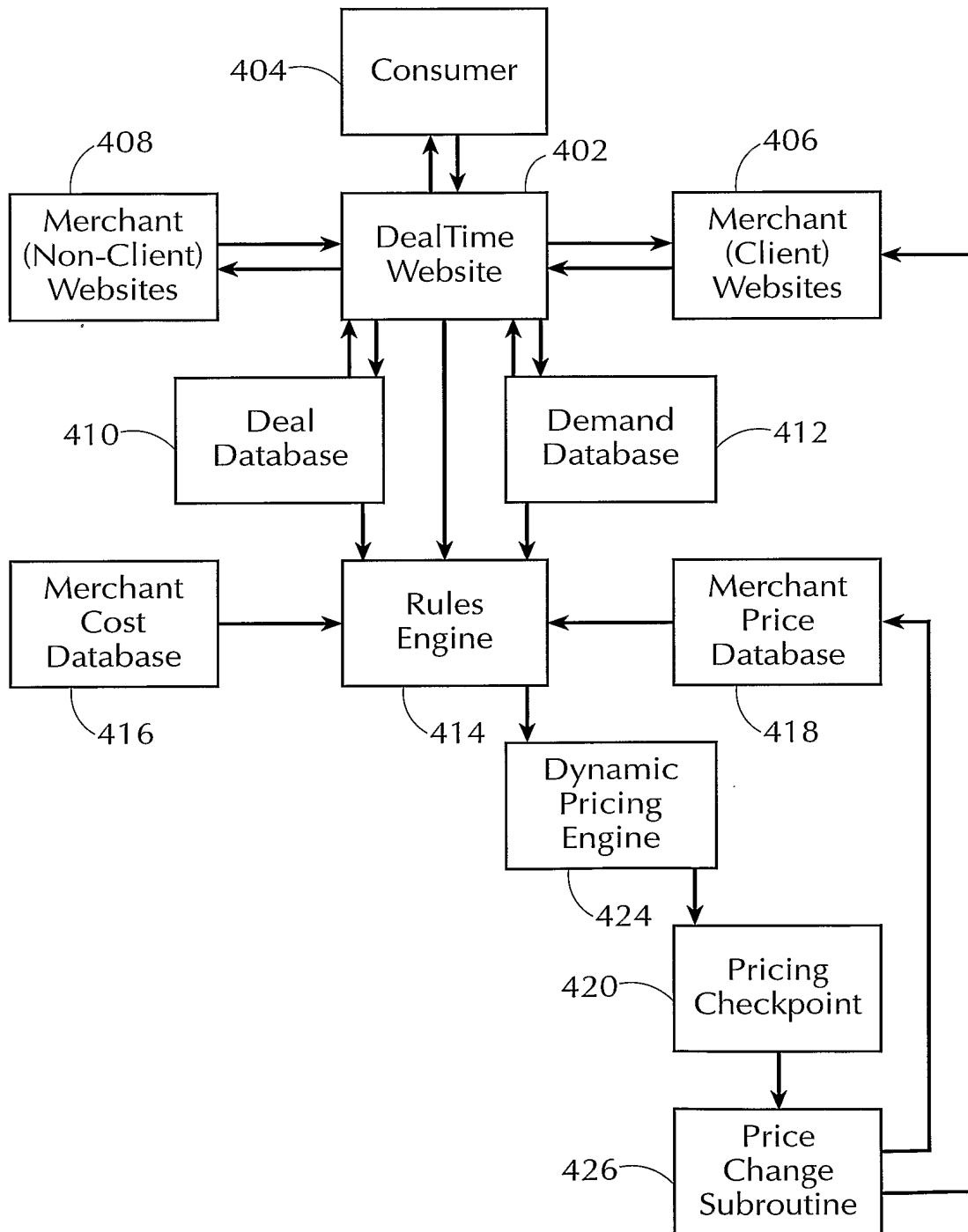
**FIG. 1**

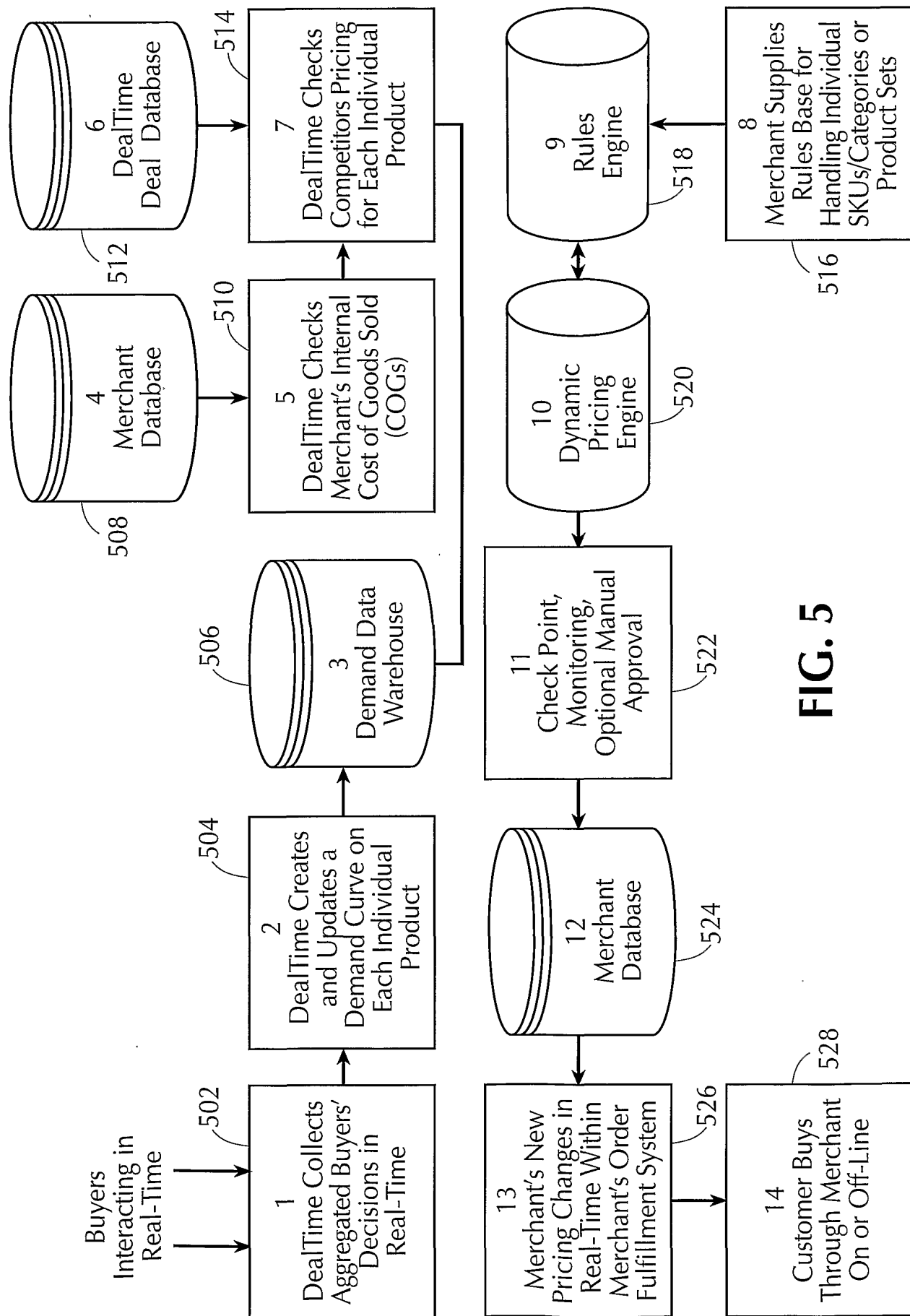


FIG. 2

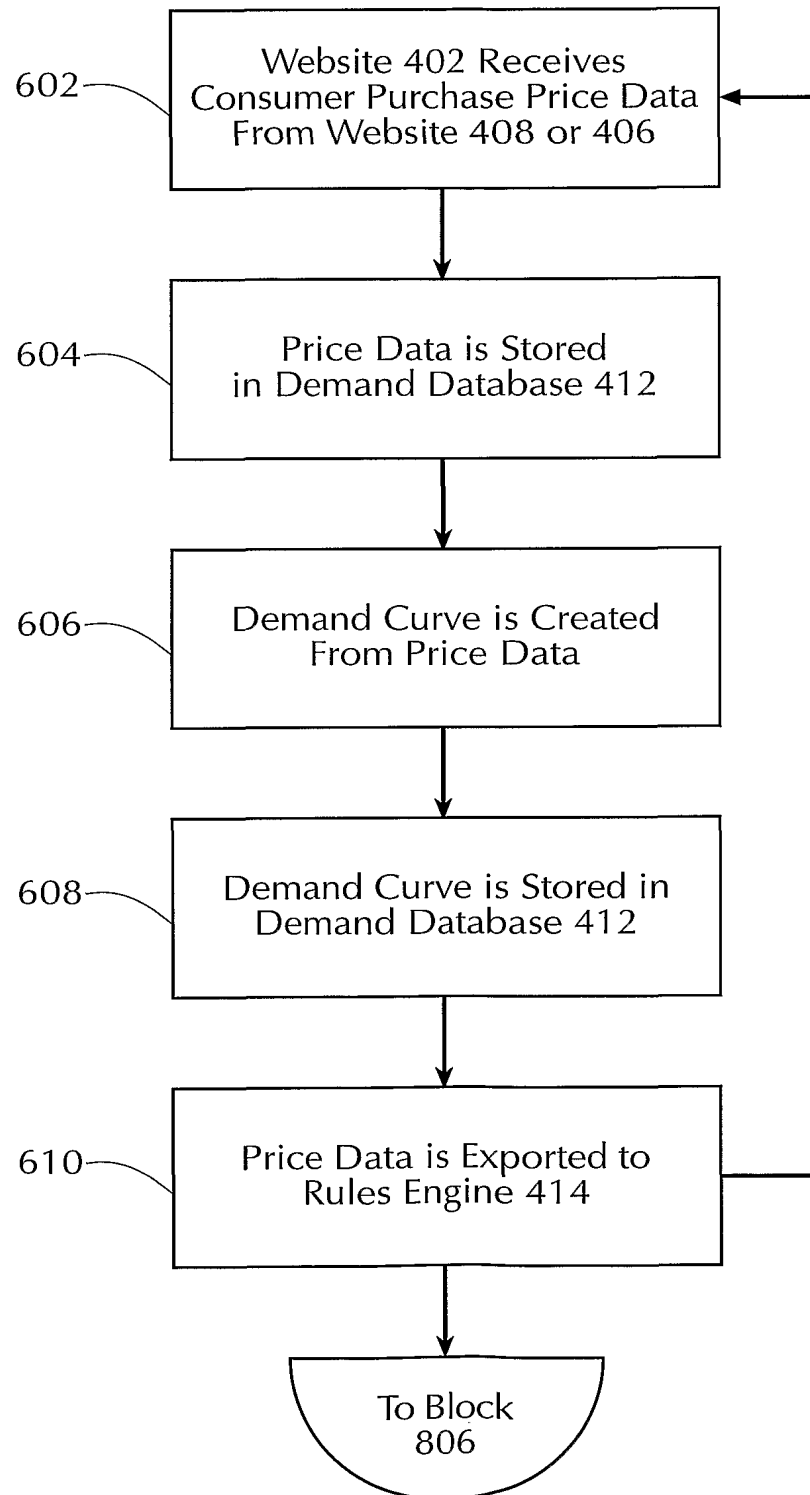


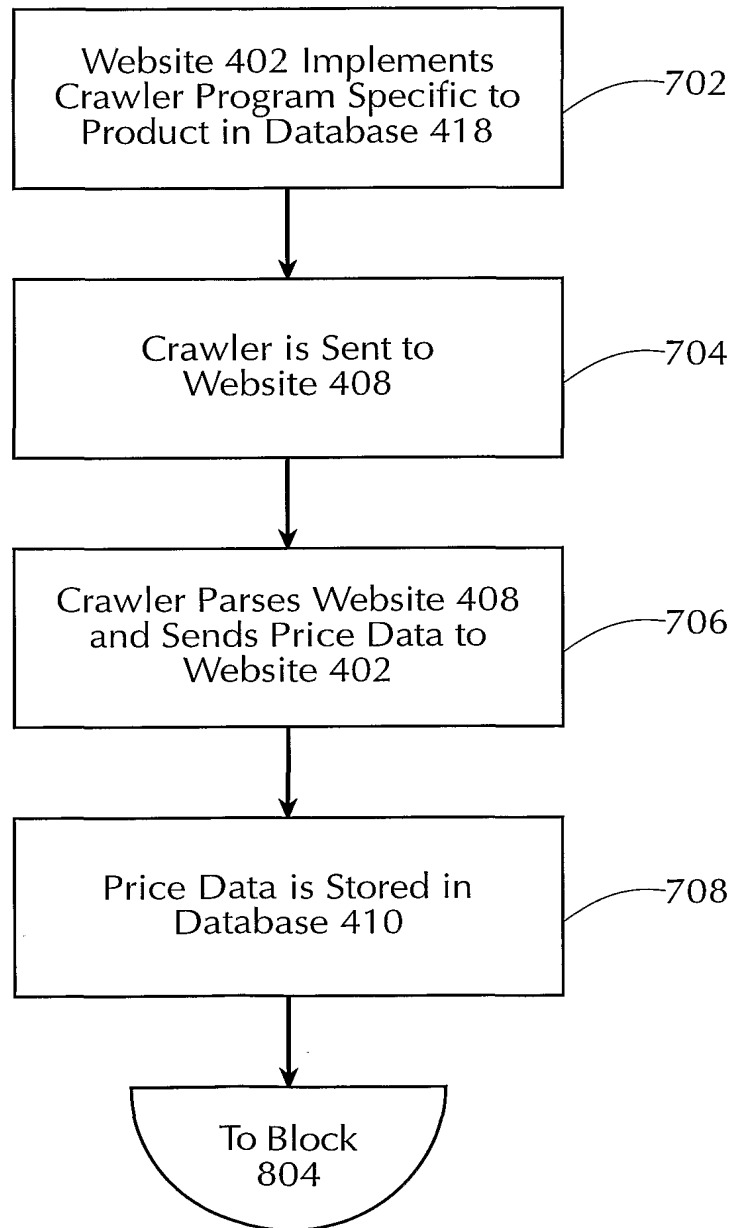
**FIG. 3**

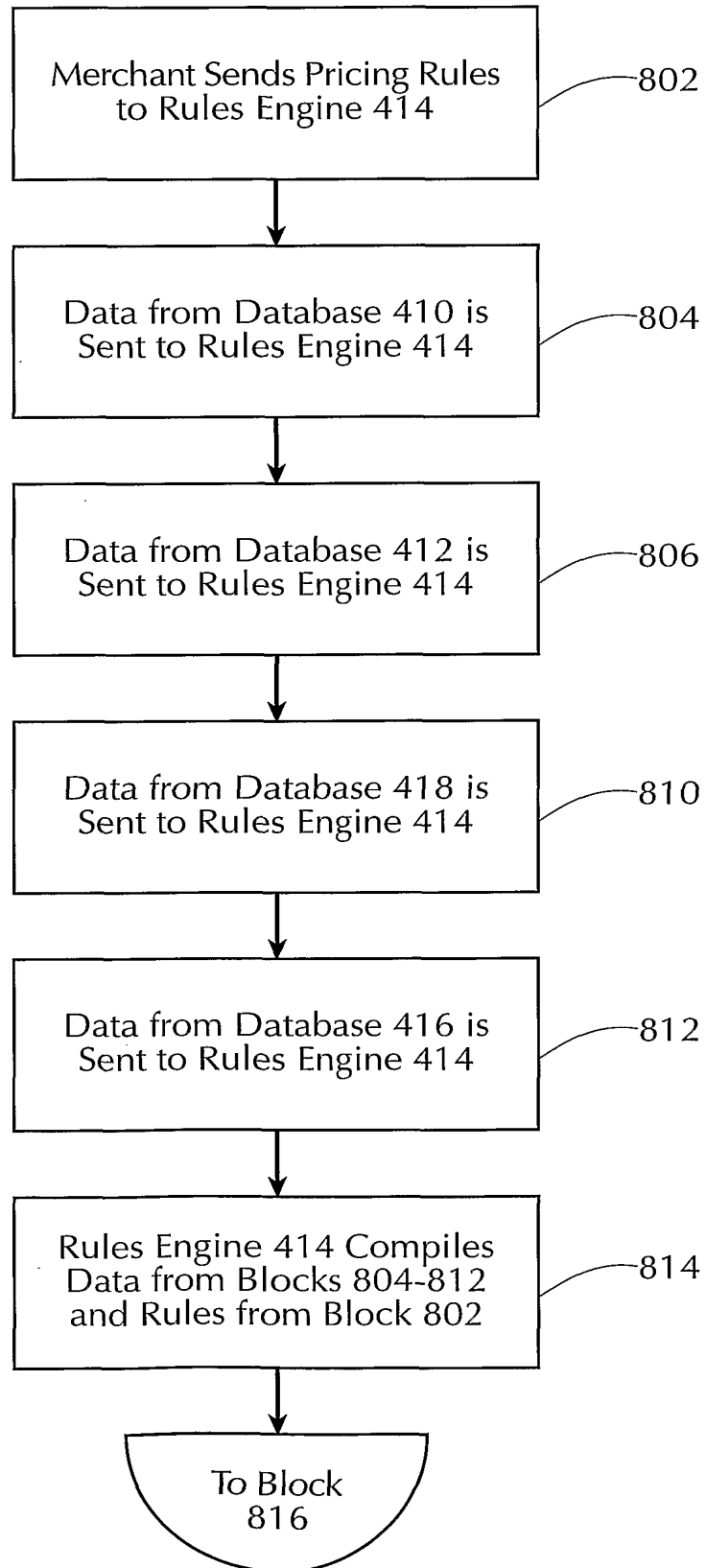
**FIG. 4**

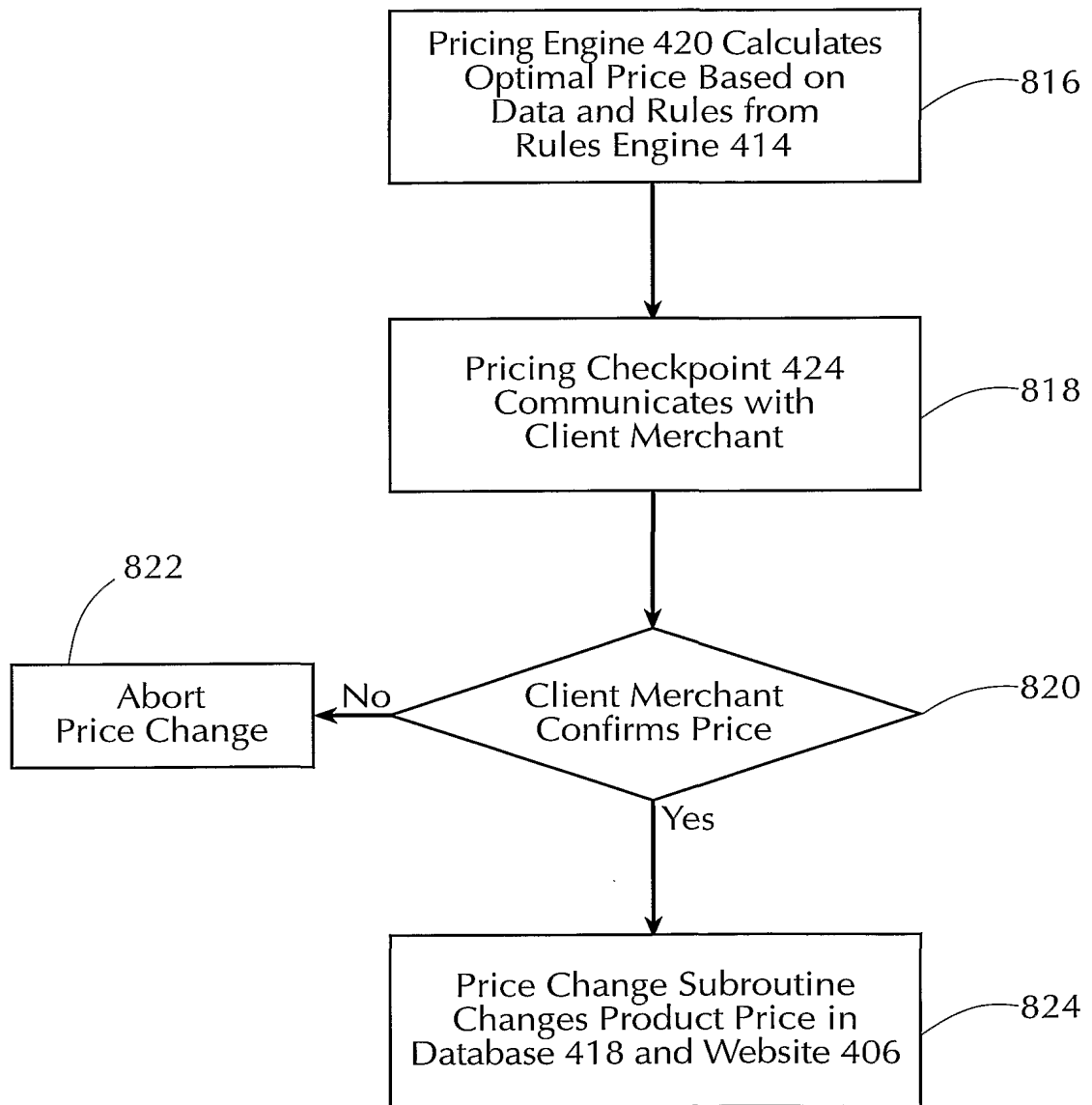


**FIG. 5**

**FIG. 6**

**FIG. 7**

**FIG. 8**

**FIG. 8**



## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US01/19695

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : G06F 17/60, 17/30, 19/00

US CL : 705/1, 14, 26, 27, 37

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/1, 14, 26, 27, 37

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

STN, WEST, EAST

search terms: purchaser, merchant, buyer, seller, change or modify of adjust price, price rule or price model, Internet, ...

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,857,174 A (DUGAN) 05 January 1999, col. 6-12	1-52
A	US 5,710,887 A (CHELLIAH et al) 20 January 1998, col. 10-27	1-52
A	US 5,999,914 A (BLINN et al) 07 December 1999, abstract.	1-52
A	US 6,061,691 A (FOX) 09 May 2000, abstract.	1-52
A, P	US 6,195,646 B1 (GROSH et al) 27 February 2001, abstract.	1-52



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:		"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

08 AUGUST 2001

Date of mailing of the international search report

24 OCT 2001

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